

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

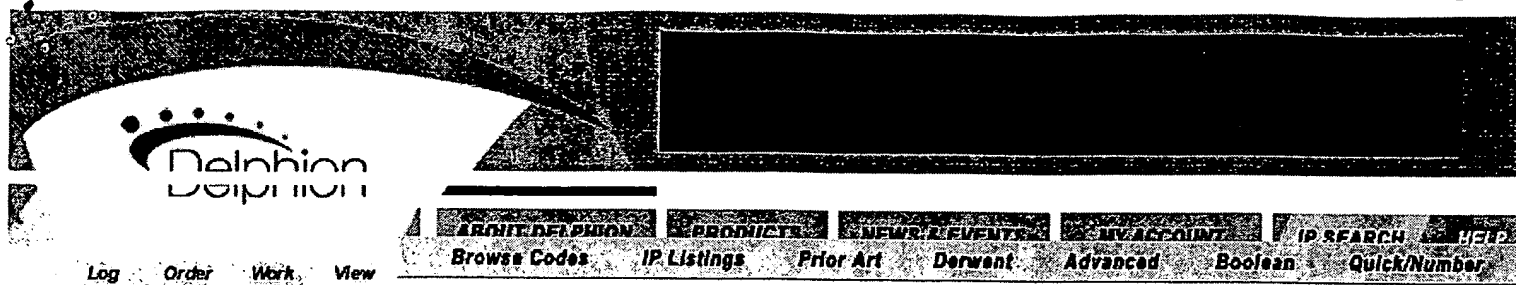
Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.



The Delphion
Integrated
View

Other Views:
[INPADOC](#)

Title: **JP7029563A2: BATTERY SEPARATOR AND LITHIUM BATTERY USING THE SAME**

► [Want to see a more descriptive title highlighting what's new about this invention?](#)

Country: **JP Japan**
Kind: **A** (See also: [JP7029563B4](#))

Inventor(s): **FUJII TOSHIO
HANDA KEISHIN
NAKANISHI HIROSHI
WATANABE KIYOUSUKE
USAMI YASUSHI**

Applicant/Assignee: **MITSUBISHI CHEM CORP**
[Inquire Regarding Licensing](#)
[News, Profiles, Stocks and More about this company](#)

Issued/Filed Dates: **Jan. 31, 1995 / Nov. 5, 1993**

Application Number: **JP1993000276947**

IPC Class: **[H01M 2/16](#); [H01M 2/18](#); [H01M 6/14](#); [H01M 10/02](#);**

Priority Number(s): **May 11, 1993 [JP1993000109619](#)**

Abstract:



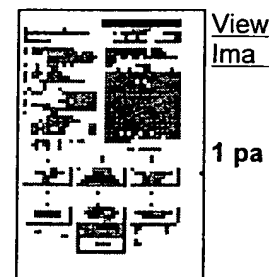
Purpose: To prevent the overheating of the battery by using as a separator a porous film or sheet made of ultrahigh molecular weight polyethylene having a viscosity average molecular weight of a value greater than that specified, the film or sheet having a specified thickness, air permeability, hole percentage, pin piercing strength, thermal blockage temperature, and thermal film breakage resistance temperature.

Constitution: As an ultrahigh molecular weight polyethylene, polyethylene having a viscosity average molecular weight of 500,000 or more and, as a plasticizer added thereto, paraffin wax, n-alkane, or the like which has compatibility with the ultrahigh molecular weight polyethylene and which does not evaporate during melt-kneading or forming is used. The polyethylene and plasticizer are kneaded together and are melt-extruded to make a film or a sheet. As a result, a separator with a high resistance to thermal film breakage which has a thickness of 10 to 100µm, an air permeability of from 20 to 2000sec/100cc, a hole percentage of 15 to 80%, a pin-piercing strength of 120g/25µm or more, and a thermal film breakage temperature of 160°C or more is provided.

COPYRIGHT: (C)1995,JPO

► [See a clear and precise summary of the whole patent, in understandable terms.](#)

Family: [Show known family members](#)



Other Abstract Info: CHEMABS 121(26)302605X DERABS C94-201615

Foreign References: No patents reference this one



Nominate this
for the Gallery...

[Subscribe](#) | [Privacy Policy](#) | [Terms & Conditions](#) | [FAQ](#) | [Site Map](#) | [Help](#) | [Contact Us](#)

© 1997 - 2002 Delphion Inc.

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 07-029563

(43)Date of publication of application : 31.01.1995

1)Int.Cl.

H01M 2/16
H01M 2/18
H01M 6/14
H01M 10/02

1)Application number : 05-276947

(71)Applicant : MITSUBISHI CHEM CORP

2)Date of filing : 05.11.1993

(72)Inventor : FUJII TOSHIO

HANDA KEISHIN

NAKANISHI HIROSHI

WATANABE KIYOUSUKE

USAMI YASUSHI

0)Priority

Priority number : 05109619 Priority date : 11.05.1993 Priority country : JP

4) BATTERY SEPARATOR AND LITHIUM BATTERY USING THE SAME

7)Abstract:

PURPOSE: To prevent the overheating of the battery by using as a separator a porous film or sheet made of ultrahigh molecular weight polyethylene having a viscosity average molecular weight of a value greater than that specified, the film or sheet having a specified thickness, air permeability, hole percentage, pin piercing strength, thermal blockage temperature, and thermal film breakage resistance temperature.

CONSTITUTION: As an ultrahigh molecular weight polyethylene, polyethylene having a viscosity average molecular weight of 500,000 or more and, as a plasticizer added thereto, paraffin wax, n-alkane, or the like which has compatibility with the ultrahigh molecular weight polyethylene and which does not evaporate during melt-kneading or forming is used. The polyethylene and plasticizer are kneaded together and are melt-extruded to make a film or a sheet. As a result, a separator with a high resistance to thermal film breakage which has a thickness of 10 to 100 μ m, an air permeability of from 20 to 2000sec/100cc, a hole percentage of 15 to 80%, a pin-piercing strength of 120g/25 μ m or more, and a thermal film breakage temperature of 160° or more is provided.

GAL STATUS

Date of request for examination]

06.09.1999

•Date of sending the examiner's decision of rejection]

Kind of final disposal of application other than the
examiner's decision of rejection or application
converted registration]

Date of final disposal for application]

Patent number] 3050021

Date of registration] 31.03.2000

Number of appeal against examiner's decision of
rejection]

Date of requesting appeal against examiner's
decision of rejection]

Date of extinction of right]

Copyright (C); 1998,2000 Japan Patent Office